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AMERICAN INVESTMENTS

SOME SUGGESTIONS

AS TO

CAUSES OF EXISTING DEPRESSION IN TRADE,

AND THEIR REMEDY.

A SAMPLE OF THE OPPORTUNITIES OFFERED FOR INVESTMENT IN THE
SOUTHERN STATES.

BY WM. L. BREYFOGLE.

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THE sole object of this publication is, as its title implies, an effort to direct the Capitalist and Laborer alike to the consideration of questions of mutual interest, and to assist in the development of the South, particularly that portion possessing the greatest number of natural advantages.

While the author is a large holder of lands, particularly in the districts especially mentioned, he begs to state that he looks for his returns in the general development of the future, rather than in disposing of them at anything like the present prices. There are large tracts of land, eligibly situated, that can be purchased for less money than he asks for his own, and he will be pleased to give information to any one who is in earnest and who is disposed to assist in the grand work.

Until September 1, 1886, address Crossville, Cumberland County, Tennessee; after September 1st, Louisville, Ky.

WM. L. BREYFOGLE.



AMERICAN INVESTMENTS

The existing depression in business in the United States, and, particularly, in the Northern States of the Union, the disturbance in labor, the shrinkage in values, both of property and labor, and of the products of the soil and the factory, so noticeable during the past four years, are rapidly turning attention to the consideration of causes underlying those hitherto accepted as sufficient to account for temporary depressions which have always been followed by still greater advances.

The long continued and steady decline now upon us is so different from anything in our former experience as to indicate an entirely new cause. When we look abroad and find Europe going through a like depression, it is clear that the cause, however greatly our affairs may have contributed to it, is not confined to our own country, and we may well ponder as to its full scope and significance in order to consider how it is likely to affect our own future development and progress.

The completion of the Suez canal in 1869 marked the beginning of a great change in the commerce of the world; a change greater than any in its history, save only that growing out of the discovery of America four centuries ago. Singularly enough, its beginning was laid in the realization of the dream of Columbus—the discovery of a short route to India. The change is in its inception, but its extent is beginning to be vaguely felt. In the meantime, the Western hemisphere has grown to be a vast power, and, led by the United States, will play its full part in the future development of the commerce of the world.

England, with her supremacy of commerce, with her military and naval stations and her colonies all over the world; with a government which is in its organization a gigantic commercial company, her ministers the directors, her army and navy the executive force to control, her colonies and stations in the field, and her commerce, manufactures, and wealth the means for development, is in the leading position to-day to reap great wealth from this new world (for practically the Suez canal, by bringing India and all Southern and Eastern Asia and Australia many thousand miles nearer to Europe, has created a new world of commerce), except in so far as she may be obstructed by the rival interests and needs of the other powers of Europe.

Russia, blocked at the Dardanelles, is forcing a parallel line overland via Herat, while the newly-created German Empire must have outlet of colonies and commerce to support the vast establishment created. The positions of Germany to-day may be likened to that of a farmer who has built, on a hundred-acre farm, houses and barns which it will take a thousand acres to maintain. He must have more land. So, too, Germany must have more

territory—colonies—and she must have an outlet to the Adriatic—a water front connected with the Mediterranean instead of having to go around Europe to reach even the outer entrance to the Mediterranean, and that guarded by Gibraltar just as the canal itself is guarded by Egypt occupied by England. France, Austria, Italy, Spain, have like interests in this new trade, and while the European powers are all settling this matter among themselves it will be well for the United States to look over the field at home, see what is necessary to be done here, and get ready to act her part, as the leader of the Western Hemisphere, in the commerce of the world hereafter.

The first thing to be done is to equalize the development of the Union, that it may be strong at all points.

NORTH AND SOUTH.

THE NECESSITIES OF THE NORTH.

The necessities of the North and the opportunities of the South were never so well calculated or so happily timed to give to each section immediate and great prosperity—necessarily resulting in a cordial and thorough union of interests and feeling—as those which exist to-day. The situation in the South is such as to promise for itself unprecedented development and growth in wealth, and for the North a great and lasting revival of all its industries, if only good sense and good feeling shall reign and the causes of present depression and disturbance shall be honestly and fairly sought for and considered with a view to the common good of both sections.

Europe, with its many nations, each maintaining a standing army, each antagonizing the interests of the others, can not work as a whole for the common good, but each must struggle for itself and against the others. We are one people, our interests can and should be made common, and our whole strength used to a common end; and all that can prevent this is a continuance of the past unequal growth of the Republic.

The North and the South must now become either allies or rivals. If the first, both sections will gain unprecedented prosperity. If the last, then, while the North must lose much, the South will gain something, but far less than if both sections move together. In other words, the South can grow in a way to build up the North, or it can grow at the expense of the North. Nothing can prevent its growth, but it is for the North alone to determine what share or part she will take in Southern development, for, beyond any question, the “forks of the road” have been reached. A brief statement of the case will make this clear.

For the past thirty years, the North has been pushed ahead by the stimulating forces of three great systems of laws, operating upon a public domain of half a million square miles of the most fertile land in the world, lying north of the Ohio and between the Appalachian chain and the Rocky mountains. These laws are the homestead laws, the land-grant laws, and the tariff laws. Under their operation, the territory upon which they operated directly, as well as all the Northern States east of the Rocky mountains, have been developed to a point fifty years in advance of any development that could have been made under conditions such as existed during the past thirty years in any other portion of the earth's surface, of equal area. We speak of the South as having fallen behind. So it has. And yet, no other portion of the earth, except the Northern States of the Union, has grown so rapidly as the Southern States. Still, it is true, that the South has not had anything like her legitimate growth during this period. Nor is it difficult to see why this has been, when her position is considered, even standing by itself.

For forty years before the late war the South was restricted by her peculiar institutions to the development of her slave and cotton interests. Then for four years she had to stand the complete loss of time and the destruction of a great war fought on southern soil; the disturbance and reorganization of her labor system from slave to free labor; the loss growing out of the inability of her leaders and people to quickly adapt themselves to the utterly changed condition of things; she was without knowledge of her real resources under her new conditions, and necessarily years were consumed in reconciling herself to the defeat of her cherished plans, and the greater blessing that had come to her out of defeat, but which she failed at first to recognize. Five years ago the South was fifty years behind her legitimate growth, behind where she would have been had her own institutions helped instead of hampered her, and had not the unparalleled conditions of the North for development absorbed an undue portion of the growing strength—the sap—of the republic. For, after all, here was the real check upon the South.

Briefly stated this was the real position :

The Northern States had the public domain. Their system of free labor gave the fullest possible opportunity to develop it, in all ways. The Homestead and Land Grant laws, taken together, formed the foundation of a real estate scheme more gigantic in proportion and more magnificent in its possibilities than anything the world had ever dreamed of; nor, indeed, have those who put together the parts of the machinery ever had a full conception of it as a whole—"they builded better than they knew." Free homes for all the world who would come and take them; a country with every advantage of fertility, health, water; every kind of natural wealth; with wonderful natural facilities for transportation—rivers, lakes, a level country—and with a land grant system that gave to the capitalist free railroads just as it gave to

the settler free homes; a traffic that practically gave to the manufacturer a free plant because early profits very soon reimbursed his advances. Here was a foundation for capitalization, for development and production, for every class, the capitalist, the middleman, the laborer! Is not all this enough in itself to show that no part of this country, or of any other country not possessing these conditions (and no other region on earth did possess them) could fairly grow in competition with a country with such advantages. Nothing could check, hinder, or divert the tide of capital and labor that would be drawn after such a movement until it had run its full course. The extent of this unequal growth can only be realized when it is found, as the census of 1880 shows, that eighty per cent. of all the capital invested in farms, in railroads, in manufactories, in cities, towns, in all that goes to make up civilization, was to be found in the States north of the Ohio and between the Rocky mountains and the Atlantic, the remaining twenty per cent. being divided between the South and the Pacific coast States. But one thing could check this movement. Whenever the Northern States should outgrow their markets, domestic and foreign, then the movement would be checked and the tide of capital and labor flow elsewhere.

The questions then are, first, has the North outgrown its existing market? If not, then the North must, until that condition shall be reached, continue to be the best field for investment, and Southern investment is of minor importance. Or, second, if it has outgrown its market can it find a new *foreign* market large enough to support its increased development at the rate of its past growth? If so, then it is still the best field, and Southern investment is a side speculation. But if not, then Southern investment must take the lead, for no sane man will undertake to say that the North, without additional markets, can maintain its proportion of eighty per cent. of the wealth of the country, nor can the Eastern States supply an additional market for Western products. The principal product of the Western States is breadstuffs. The increased consumption, from growth of population, will be supplied by increased production from the same cause. The surplus can only be taken up by an increase in the proportion of home consumers who are not producers, or an increased purchasing capacity on their part, or by an increased export demand.

Let us consider, first, the probability of an increased export market for the surplus breadstuffs of the Western States east of the Rocky mountains.

The value of the export of breadstuffs from the United States for the past ten years is very instructive on this point. In 1876 it was, in round figures, \$130,000,000. In 1877, \$116,000,000—a year of short crops. In 1878, \$180,000,000. In 1879, \$209,000,000. In 1880, \$286,000,000. In 1881, \$269,000,000. In 1882, \$182,000,000. In 1883, \$207,000,000. In 1884, \$162,000,000. In 1885, \$160,000,000. While for the nine months ending March 31, 1886, it was only \$82,000,000 as compared with \$121,000,000 for the corresponding period of the year before. These are the official fig-

ures of the Bureau of Statistics of the Treasury Department at Washington, and are for the fiscal years ending June 30th of the respective years. At the present rate the exports of breadstuffs for the year ending June 30, 1886, will be of less value than those of 1876, or even for the short-crop year of 1877 (covering the short crop of 1876), although this year our visible supply is larger than ever before known.

Still, even these figures would not be conclusive in themselves, unless there was some general change in conditions permanent in character, out of which this result has grown. What has made the change?

The answer to this is, many things have combined to make it. The first inroad upon the breadstuffs market of the Western States was made by California, and grew out of the decline in the production of gold. In the ten years from 1850 to 1859, inclusive, the gold production of California alone was \$555,000,000, or over \$55,000,000 a year. But in the ten years from 1860 to 1869, inclusive, it was only \$309,000,000, or less than \$31,000,000 a year. To replace this loss of twenty-four millions a year, wheat production was resorted to, and in the later years of this period some wheat was exported. The yield of gold steadily diminished, so far as California was concerned, and in 1884 it had fallen to \$13,000,000, and wheat production has been the mainstay in the effort to replace it, and has grown very rapidly. It was the wheat of California, shipped in sailing vessels around Cape Horn, that taught England and Europe that it was possible to carry wheat through the tropics, and from any one point in the world where there was navigable seas, to any other port. It was shipped in sacks, but that method had its advantages as well as disadvantages, and among the former was the doing away of necessity for elevators, and that wheat could be loaded at any port to which it could be brought, in any sort of vessel, without the necessity of fitting her up especially for carrying grain. Of course, California wheat is as much a competitor with the wheat of our Western States as that exported from foreign countries to our foreign markets. But in 1869 the Suez Canal was completed, and the possibilities of Indo-European commerce began to be considered in a new light. To-day India stands second in the world in the quantity of her wheat exports, and it is a singular and suggestive thing, that for the two months of January and February, 1886, her exports of wheat to Great Britain—our largest customer—were almost double the amount which the United States sold to Great Britain during the same period. Australasia and South America are rapidly becoming large exporters of wheat. India has about two hundred millions of people engaged in agriculture, and many million acres of land adapted to wheat culture that are still covered with forest. In the face of all these facts, it is as impossible that the Western States can regain the foreign market, which they have lost in the last five years, as anything that could well be conceived. Can we find new foreign markets for our breadstuffs? What part of the earth offers them? On the contrary, do we not see springing up all over the

world—in India, in Australasia, in South America, in improved methods in Russia, competitors with us in breadstuffs production, instead of consumers for our surplus?

But our home market has always been the great market for breadstuffs and has consumed the great bulk of our cereal products. What are the probabilities of increasing this home market, as things now stand? Depression is as great in the East, among the manufacturing and laboring classes, who compose the great market for Western breadstuffs, as it is among the farmers of the West. Nor is the cause of this hard to find. In past years the operation of the tariff laws has been to restrict imports of manufactures and to give the domestic manufacturer virtually a monopoly in supplying the material required in building up the vast empire of the West. Its tens of thousands of miles of railroad, its cities, towns, bridges, all the material required for constructing a city or town and a settled country about it in a wilderness, and this multiplied by thousands, has been the contract of the Eastern manufacturer and capitalist. It was the building up of this empire, transporting a population to it in the first place, then supplying them with material to construct their homes, and to improve their farms, and till their ground, and then bringing out their surplus products, that gave to every railroad all it could do from the day its rails were laid, that made it so easy to borrow money at once to build a railroad anywhere, especially when the land grant far more than guaranteed a return of the real cost of construction. It was not only a free railroad, practically speaking, but a railroad with profits sufficient to result in watered stock. The enormous demand for material—material practically limited to domestic production by the operation of the tariff laws—gave to the manufacturer all and more than he could do to supply the demand, and at his own prices. There was no competition, because every manufacturer had more than he could do to fill orders, and prices rose steadily as the fever progressed. This gave employment, at high wages, to all who sought it, and rapidly built up the market of the Western farmer for his surplus, and he in turn had his own prices at home, because free from competition, and practically his own prices abroad for any surplus he might have, because, first, his surplus was not very large, and secondly, even in foreign markets he was competing only with foreign producers, whose supply and facilities of transportation and exchange were inferior to his own. So it went on. Emigration kept up in ever-growing volume, the flow of capital steadily increased. Profits in farms went into more farms. Surplus from railroad earnings, and capital attracted by such results, built additional roads. Money made by manufacturers was reinvested in additional plant. In 1880, 1881, and 1882 high tide was reached everywhere, in all branches, in agriculture, manufactures, railroads, building, and prices—if we consider things from a specie basis.

But how is it now? Wide margins of profits are gone. The farmer has met with new competition in foreign markets, with a lessened relative de-

mand and lower prices at home ; the demand for material for *construction* has largely dwindled to a demand for purposes of *repair*, and the sharpest of competition has set in in consequence and the tariff cuts but small figure in regulating *prices* simply because the home supply is in excess of the home demand and our foreign commerce is small and conducted through the medium of a foreign-carrying trade which drains us instead of feeding us. This lets down the weight on the workingman and his purchasing power is restricted. The railroad system of the North—a system constructed with a rush and upon a theory that the future growth had no limit and backed by eager capital equally short sighted, a system very largely swelled in its capitalization by water—is finding that instead of having another great empire to build in the West it is coming down more and more to the work of hauling out a diminished volume of freight for Eastern consumption and export. In a word, for five years past the entire North has been entering upon a period of readjustment of values both of property and labor. Taking together the Northern farmer, manufacturer, and railroad man as a firm, they may be likened to a great firm of railroad contractors who have performed an enormous work, at great profit, have invested all their profits as they went along in more plant to carry on railroad building, have completed their work, been fully paid off, but can not sell their mules, their wheelbarrows, or their tools, and can not even discharge their men. They must either find a new contract at once, and an enormously large one, larger than they had before, to employ their force and plant, or else they must live on mule meat and wheelbarrows.

Where are they going to find this new contract? Abroad? It will take twenty years at least to build up a foreign commerce and a foreign carrying trade. We must get a new crop of Congressmen to consider these questions. Internal affairs and internal prosperity have absorbed our legislation, and the consideration of our bankers, our merchants, our capitalists, our manufacturers. We must make commercial connections, find out wants and exchanges, change our laws, build ships, man them by crews who can compete in skill and in *wages* with the commercial nations of the world. All this will take time, twenty years at least. That will not do. We must find a contract nearer home.

We have one field, and only one—the South. The necessities of the North imperatively demand that it shall work this field. The investor in the North or abroad who now enters this field has the entire wealth of the North as security that the South will be rapidly developed. A good part of the manufacturing depressions of the North is caused by Southern competition, notably in iron. The South can make iron and lay it down at the manufacturing and trade centers of the North at a profit far less than the actual cost of manufacture in the North. It can do this to-day. It has been able to do it for several years past. It can continue to do so. It can do it because the small flow of investment that has gone into the South, so far, has

naturally sought that in which there was the quickest and surest outcome, and the manufacture of iron has increased more rapidly than the general growth, and thus sought a Northern market for want of one at home, and has disturbed and depressed the iron trade of the North.

To generally develop the South in such a way that it will consume the products of its own manufacturers and create such a demand for the surplus capital and products of the labor of the North as the West created for the East is the necessity of the North to-day. It is feasible. The time is ripe. The way is open. There is no other field on earth open to the North to be worth serious consideration; none that will meet the necessity of the case, or a tithe of it.

It is claimed that the West is still growing, but analysis will show that it is a growth by transfer more than by addition. Take, for instance, the two most notable spots, Kansas City on the south, and St. Paul and Minneapolis to the north, of Chicago. Each has grown at the expense of Chicago. Each has grown *because* of the pinching off of the profits, and the necessity of transferring the two largest interests, of Chicago—the packing interests and breadstuffs—to cheaper points. A study of the facts, coming up every day, will bear out this proposition in innumerable directions. The field for *new growth* is in the South. It must be developed equally with the West and the East. The doing of this will, for twenty years, afford every man in the North work at good wages, will employ all the surplus capital at a profit, and set every wheel turning. The American people can not stand still, and will not go backward. They belong to the order of dynamics, not statics.

This brings us to the question as to the opportunities of the South, and the openings there where capital is likely to make its first and quickest returns. In a general way, this answers itself by saying in those portions where land is the cheapest and natural wealth greatest, provided there are no serious drawbacks in the way of unhealthiness, an enervating climate, and bad water.

THE OPPORTUNITIES OF THE SOUTHERN STATES.

The natural wealth of the Southern States is very much greater than that of the North. Taken all in all, it would probably be within bounds to say that it is as two to one. It is, in truth, wonderfully rich in all the gifts of nature, climate, soil, water courses, water power, timber, coal, iron, clay, stone—all the metals and minerals of common use to the world. It is within bounds to say that it has double the foundation of natural wealth on which to build an empire that the West had. Is it too much to say that in the present condition of the North, with the idle plant and capital forced into inflated enterprises for want of other fields, the South has in double measure the conditions of Northern capital seeking investment of product and plant to make it, seeking a market, that the West had in Eastern capital and

plant and necessities thirty years ago? Is it too much to say that with the enlarged capital and more pressing necessities of the North of to-day, with the advantage of all that the North has gained in experience in the last thirty years in developing and capitalizing a wilderness—with all this added force operating upon a richer field; with a development begun in all ways, and railroad communication already established between all parts of the South in a skeleton way; with the North pouring out upon the South the flood of capital she has so long exclusively absorbed, monopolized, and kept from the South—with all this change, is it too much to say that twice as much wealth can be created in the South in the same period of time as was created in the West? Or, to put it in another way, that in fifteen years as much wealth can be created in the South as has been created in the West in the past thirty years. Is it too much to say that out of the creation of this wealth in the South by and through Northern capital and labor, as great a proportionate gain will go to the North from Southern development as went to the East from Western growth? Is it too much to hope that out of such unity of interest will grow a community of feeling as strong and lasting as that which grew up between the East and West, and which stood the severest of all possible strains—standing together through a civil war? What, then, can hinder, prevent, divert, or delay? No earthly power can stop this movement. The time has come for it. The necessities of one section have met the opportunities of the other, and we are at the threshold of an advance in development in the South greater even than was before the West thirty years ago.

The question, therefore, for the capitalist to consider is what are the keys to the position? Where can capital be best employed to produce that which the settler must need in building his new home; and where can the distributing point be located for an exchange of product; and can this natural wealth be controlled and the country around about it secured for settlement, and can distributing points be created and transportation had to reach with this product more distant points? What are the advantages for settlers who can supply the labor of production? What is there for the settler and the laborer, as well as the capitalist? What is there to start on, and what can be developed?

Modern civilization makes coal, iron, and timber the prime requisites in starting, as well as in continuing, development. And a soil to produce that which those producing them consume. Then there must be outlet product, and facilities for reaching a market as cheaply as other producing centers can reach it. As much beyond this as can be had, but these things are essential.

The writer has spent much time and study in careful investigation as to the best field for a large and quick outcome from relatively small capital, and having the broadest and deepest foundation of natural wealth and the fewest and most temporary drawbacks to its development, knowing that

whenever the Western tide reached its flood and began to ebb the Southern flood tide would set in.

With a general knowledge of all the Southern States and their advantages and disadvantages the writer has been led to regard the State of Tennessee, from its great variety of natural wealth, as the finest field for attracting capital and yielding great results. It has all the natural wealth that Pennsylvania has, and some things that the Keystone State lacks. Considerable time spent in Tennessee in investigating the resources has deepened his convictions in regard to the advantages offered by certain portions of the State.

The great magazine of wealth which nature has stored up for the development of the South is in the mountain ranges that extend from Pennsylvania to Northern Georgia and Alabama, and of these two ranges that form the Appalachian chain the Cumberland or Western range is by far the most important. It contains coal of the same quality in Tennessee that is found in it in Pennsylvania, and iron of the finest quality. It is heavily timbered. It is beautifully watered. It is, in Tennessee, not a mountain range or a system of ridges but broadens out into a magnificent plateau from thirty to eighty miles wide, with an elevation of from fifteen hundred to two thousand feet above the level of the sea, and bearing upon its surface a mountain range rising in different portions of the plateau from one to two thousand feet above the tableland; with the most bracing and tonic atmosphere to be found anywhere in the South; with an abundant and well-distributed rainfall; with remarkable conditions of health and with advantages for settlement and for the production of wealth that are wonderful.

CUMBERLAND COUNTY.

The most valuable lands to be found perhaps in the whole Cumberland plateau are those of Cumberland county, Tennessee. The elevation is from eighteen to twenty-one hundred feet above sea level. The tableland here is about fifty miles wide, and the range of mountains lying ten miles west of its Eastern edge, locally known as Crab Orchard mountain, rises a thousand feet above the tableland. This county is the second in the State in area, and the largest of the tableland counties, having an area of nearly seven hundred square miles. The thirty-sixth parallel north and the eighty-fifth meridian west of Greenwich cross about the middle of the county. The walls of the tableland on both the east and west side at this point rise abruptly above the valleys of East and Middle Tennessee from one thousand to twelve hundred feet. The county extends from the eastern side to within about eight miles of the western edge, and is a rolling tableland generally speaking, though broken and mountainous from the eastern side ten miles west to Crab Orchard mountain. It is sparsely settled, having some twenty post-offices, but no considerable towns in its population of fifty-five hundred. Crossville, the county-seat, is a little town of about one hundred people. The county seat is about twenty-two miles from the eastern side of the pla-

teau, and a little further from the western side. The water shed of the county is a flat ridge running north-east and south-west through the county about six miles west of Crossville. Crab Orchard mountain lies in a parallel line and nearly twenty miles east, and is nearly a thousand feet higher than the western ridge, but all the streams rising on the east side of this flat ridge flow through gaps in Crab Orchard mountain into the tributaries of the Tennessee, while the streams taking their head west of it flow into the tributaries of the Cumberland river.

From Crab Orchard mountain to the western bank of the plateau the surface is a true tableland, worn by erosion into a rolling country, and with some small, shallow, and beautiful valleys along the little streams, but undisturbed either by upheavals or sinks in the strata, which lies horizontally. East of Crab Orchard to the eastern brink it is a broken country. Limestone crops out about the foot of Crab Orchard mountain, but the whole cap of the tableland is of sandstone, varying in thickness from one hundred feet down to a few feet in the hollows, where erosion has worn it almost to the coal. In many places streams have cut through the coal, and some hollows reach below it.

COAL AND IRON.

“The Tennessee coal field belongs to that division known in geology as the Appalachian coal field, which, commencing in Pennsylvania, extends over Ohio, Kentucky, West Virginia, Tennessee, and ends in Alabama. * * The area of this coal field in Tennessee includes within its limits the counties of Scott, Morgan, Cumberland, the greater part of Fentress, Van Buren, Bledsoe, Grundy, Sequatchie, and Marion; considerable parts of Claiborne, Campbell, Anderson, Rhea, Roane, Overton, Hamilton, Putnam, White, and Franklin, and small parts of Warren and Coffee.”—*Tennessee Hand Book*, p. 21.

“Including the upper and lower coal measures, there are seven strata of coal, aggregating a thickness of from seven to fourteen and a half feet; many of these beds, however, are too thin to work, and are given merely to show the extent of the coal measures.

“The lower measures, though irregular and uncertain, supply a large amount of coal in White, Putnam, Overton, Fentress, Franklin, and Marion counties. The seams in these counties are of good thickness, and supply an excellent quality of coal.

“The main seam of the upper measures on the western side of the tableland is the Sewanee. This seam will average four and a half feet in thickness, its largest development being ten feet four inches, and its least two feet.

“The Sewanee seam furnishes a larger amount of coal than any other single seam in Tennessee, and has all the qualities that combine to make a useful and valuable coal. It varies in some of its characteristics and

“constituents in different localities, but that is a common freak of all coal seams in every coal field. It makes a good coke, is a good steam-making coal, makes a hot, durable fire in the grate, and is nearly free from sulphur. * * It is found, at a certain elevation, all over the tableland, but in the horizontal strata of the Coal creek and Winter’s Gap section of the field it has probably sunk far beneath the surface. It is the main seam of Walden’s Ridge, and continues with much persistency from Chattanooga to Coal creek. Where the ridge is regular in surface and the strata in place, the seam is of regular thickness and easily worked with the certainty of obtaining a constant supply; but where the strata is broken by ravines or gorges, it is also disturbed—sometimes lost entirely, and again rising into great thickness.”—*Handbook pp. 24, 25.*

The seam which lies just beneath the surface at the bottom of a thousand hollows in Cumberland county is the Sewanee seam.

J. B. Killebrew, A. M., in “Resources of Tennessee,” published in 1874, page 670, says of Cumberland county:

“The entire county, except the head of Sequatchie valley and Grassy Cove, belongs to the great Cumberland Coal Fields, and no doubt enough of this valuable mineral might be obtained, from this county alone, to supply the State of Tennessee for an unlimited number of years.”

A comparative analysis of coals and coke as published on pages 116 and 117 in Henry E. Colton’s Geological Reports of “Coals of Tennessee,” also confirmed in United States Geological Survey, published in 1885, is here appended, and especial attention directed to a comparison of the Sewanee seam with Connellsville coal and coke. Attention is also called to the tables, taken from the Government Reports of 1885, showing the “percentage yield of coal in the manufacture of coke in the United States in the years 1880 to 1884, by States and Territories” in which the Tennessee yield is much above that of Pennsylvania.

ANALYSIS OF COALS.

NAME OF COAL.	FIXED CAR- BON.	VOLATILE MATTER.	ASH.	SULPHUR.	WATER.	PHOS- PHORUS.	
Connellsville—Broad Ford.	59.616	30.107	8.233	.784	1.210	.	Prof. A. S. McCreath.
Greensburg, Pennsylvania.	61.340	33.50	3.280	0.860	.	.	Prof. A. S. McCreath.
Pittsburg (gas coal)	58.000	36.00	6.000	.640	.	.	Prof. A. S. McCreath.
Pittsburg, middle bench (near Pittsburg)	55.668	37.225	4.145	.980	1.040	.	Prof. A. S. McCreath.
Coal Creek, Tennessee.	57.520	38.82	3.090	0.200	1.040	.	
Coal Creek, Tennessee.	57.690	37.80	2.550	.	.	.	Potter & Riggs.
Poplar Creek.	60.670	36.53	1.750	0.780	1.750	.	Joliet I. and S. Co.
Poplar Creek.	59.470	40.00	0.530	1.260	.	.	
Careyville (new mine)	56.850	38.89	3.190	.	1.070	.	
Helenwood.	54.240	41.29	2.640	.	1.830	.	
Jellico.	60.600	36.44	1.600	1.160	2.360	.	
Poplar Creek.	56.120	39.33	2.810	.	1.240	.	Dr. Peter.
Crooke Coal and Coke Co.	61.660	34.53	2.140	0.88	1.670	.017	Regis Chauvenet.
Roane Iron Co. (Rockwood)	60.110	26.62	11.520	1.49	1.750	.	Furnished by Mr. H.
Roane Iron Co.	60.750	32.59	5.270	.	1.390	.	S. Chamberlain, Pres.
Stanley (near Chattanooga)	61.730	26.70	10.210	.530	1.360	.	Roane Iron Company,
Sewanee (Tracy mines)	62.000	25.41	10.820	.	1.770	.	No analyst given.
Sewanee (Tracy mines)	63.500	29.90	6.600	Trace.	.	.	Robertson.
Soddy mines (Sewanee seam).	64.390	27.82	6.640	.	1.150	.	H. T. Varyan.
Emery mines (Sewanee seam)	63.100	27.70	7.700	.530	.150	.	
Etna mines (Kelly seam)	74.200	21.39	2.700	.700	1.300	0.005	Prof. T. E. Wormley.
Blossburg, Pennsylvania.	1.574	21.586	4.753	0.907	1.180	.	McCreath & Poble.
Cumberland, Maryland	73.500	14.10	12.400	.	.	.	Prof. A. S. McCreath.
Quinnimont, West Virginia.	75.890	18.19	4.98	.370	6.770	.	Prof. W. R. Johnson.
Longdale	72.320	21.380	5.270	0.270	1.030	.	J. B. Britton.
Pratt mines, Alabama	61.508	31.485	5.416	.918	1.501	.	C. E. Dwight.
Helena mines, Alabama	59.580	34.370	6.050	0.660	.	.	Prof. E. A. Smith.
New Castle, Alabama	59.690	28.240	10.920	0.640	0.50	.	Eureka I. Co. Chemist.
Blairsville, Pennsylvania	62.220	24.36	7.590	2.400	.920	.	Otto Wuth.
Bennington, Pennsylvania.	61.840	27.230	6.930	2.600	1.400	.	Prof. A. S. McCreath.
Leontonia, Ohio.	56.000	39.600	1.800	0.530	2.560	.	Prof. A. S. McCreath.
Big Muddy, Illinois.	59.130	31.930	1.810	0.760	6.370	.	Prof. Wormley.
El Moro, Colorado.	55.860	38.230	3.590	.	1.320	.	Robertson.
Pocahontas, Virginia	73.728	20.738	3.984	0.618	0.662	c.0013	Prof. A. S. McCreath.

ANALYSIS OF COKES.

NAME OF COAL.	FIXED CAR- BON.	ASH.	SULPHUR.	MOISTURE.	PHOS- PHORUS.	
Connellsville—Broad Ford	80.576	9.113	0.821	0.630	} 0.011 }	Prof. A. S. McCreath.
Connellsville—Coketon	80.150	9.650	1.200	. . . .		C. Crowther.
Irvin's gas coal	88.240	9.477	0.392	1.384		Carnegie Brothers.
Irvin's slack washed }						
Bennington	87.580	11.360	1.000	. . . .	. . . .	Prof. A. S. McCreath.
Blossburg (Arnot)	84.760	13.345	0.908	0.175	. . . .	Prof. A. S. McCreath.
Allegheny River }	85.777	11.463	2.107	{ 0.330 }	. . . .	Prof. A. S. McCreath.
Lower Freeport }				{ 0.100 }		
Blairsville, Pennsylvania	81.450	15.550	1.294	. . . .	0.043	Henry Thomas.
Quinnamont, West Virginia	93.850	5.850	0.300	0.050	. . . .	J. B. Britton.
Longdale, West Virginia	93.000	6.730	0.270	. . . .	. . . .	E. E. Dwight.
Leetonia, Ohio	93.750	5.380	0.870	. . . .	. . . .	Prof. Wormley.
Sewanee seam—Tracy City, Tennessee	83.364	15.440	0.142	. . . .	. . . .	W. J. Land.
Etna (Kelly), Tennessee	94.560	4.650	0.790	. . . .	0.008	University of Cincinnati.
Rockwood, Tennessee	84.187	14.141	0.182	. . . .	. . . .	W. J. Land.
Dayton, Tennessee	84.150	14.880	. . . .	. . . .	. . . .
Poplar Creek	90.060	5.000	0.570	0.010	0.010	Potter & Riggs.
Poplar Creek	95.240	4.760	. . . .	. . . .	. . . .	Kegis Chauvenet.
Pratt, Alabama	88.224	11.315	0.563	0.362	. . . .	Prof. McCalley.
Helena, Alabama	84.025	15.216	0.445	. . . .	. . . .	Prof. McCalley.
Big Muddy, Illinois	88.180	10.670	0.610	. . . .	. . . .	T. M. Williamson.
El Moro, Colorado	87.470	10.680	0.850	. . . .	. . . .

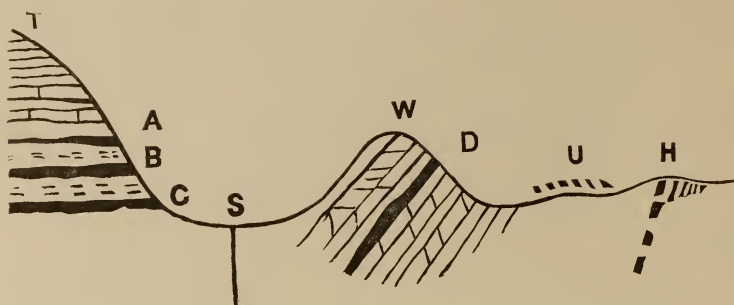
PERCENTAGE YIELD OF COAL IN THE MANUFACTURE OF COKE IN THE UNITED STATES
IN THE YEARS 1880 TO 1884, BY STATES AND TERRITORIES.

STATES AND TERRITORIES.	1880	1881	1882	1883	1884
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Alabama	57	59	58	60	60
Colorado	49	50	57	60	64
Georgia	60	60	60	60	60
Illinois	41	42	45	43	43
Indiana	0	0	0	0	0
Indian Territory	62	62	62	62	62
Kansas	64	64.4	65	62.9	62½
Kentucky	60	60	59	60	64
Montana	0	0	0	0	46
New Mexico	0	0	66⅔	57¼	57½
Ohio	58	59	57	58	58
Pennsylvania	65	64	64	65	62
Tennessee	60	60	60	62	63
Utah	50	0	50	0	0
Virginia	0	0	0	64½	64¼
Washington	0	0	0	0	57½
West Virginia	60	61	63	63	62
Total average	63	63	63	64	61

POPLAR CREEK, OR WINTERS' GAP.

“Winters' Gap is a complete cut in Walden's ridge, through which Poplar creek finds its way from the Cumberland Tableland to the Tennessee river. In the tableland at this place several veins of coal have been opened; the principal one is a seven-foot vein, opened in 1852, and for many years the coal was shipped therefrom to Knoxville and Chattanooga, and to Huntsville, Alabama. It was highly esteemed as the best coal brought from Tennessee. It is a hard, free-burning coal, bearing transportation well, and when ignited burns like a candle. It is nearly free of sulphur. It was formerly shipped down Poplar creek in barges. Near the gap is a salt well which was bored many years since, and deepened by Prof. Estabrook, who erected works at this point, but died before his plans were perfected. The well was sunk a thousand feet, and the water yielded eight per cent. of salt. On the eastern face of Walden's ridge three or more seams of coal are known to exist, and one has been opened, supposed to be the main Rockwood.

“The following diagram will serve to illustrate the topography of this most interesting spot, and will also give the position of the Red Hematite iron ore vein, with reference to Walden's ridge and the Cumberland tableland:



T. Cumberland tableland.

A. B. C. Horizontal Veins of Coal.

B swells out sometimes seven feet in thickness.

D. Coal in Walden's Ridge, five feet thick.

S. Salt Well.

W. Walden's Ridge.

U. Mineral Springs.

H. Vein of Red Hematite.

"In the valley, at the foot of the ridge, is found a large number of mineral springs, consisting of red, black, and white sulphur, magnesia, etc. The dyestone vein is here almost on a level with the valley, as at Rockwood."—*Vide Resources of Tennessee, page 204.*

Many of the little ridges of the cap of the tableland contain a good quality of red hematite iron, and in the nearest hollow a small shaft of a few feet would reach coal. The coal is of as good quality as Pittsburgh coal for coke, steam, gas, or grate purposes, is free from sulphur (see analysis), and is carried long distances into the valleys of Middle Tennessee, at large cost, for blacksmiths' uses, at points remote from railroads.

The writer's attention was attracted to the tableland to find the nearest and best coal field that could be connected with Cumberland river by a short line of railroad. The very peculiar advantages of Cumberland county over any other county of the Tennessee coal field struck him with such force as to lead to a very careful examination. Every acre of the county is underlaid with the great main seam of the Tennessee coal measures—the Sewanee seam—and it is accessible in a thousand hollows by a few feet of digging, and in many places the seam is cut by little creeks, or crops out of the banks of deep hollows. It is all there. The strata of Cumberland county west of Crab Orchard mountain lies horizontally. It has not been disturbed or broken either by upheavals or sinks.

In the counties south of Cumberland, namely, Bledsoe, Sequatchie, and Marion, the tableland is cut in two by a long narrow sink of a thousand feet, known as Sequatchie valley, and running from the southern line of Cumberland county sixty miles south to the Alabama line, and continuing a hundred miles further into Alabama, to near Birmingham, and one side of this sink is an upthrow known as Walden's ridge. Again, Fentress county,

on the north of Cumberland county, is some three hundred feet lower, and the middle measures, including the Sewanee seam, are gone, leaving only the lower or false measures, some three hundred and fifty feet below the surface, uncertain in quantity, with dips and angles that will make coal mining there comparatively unimportant for centuries to come. Morgan county, on the north-east, and Scott county are not only more broken, but their outlet is into the valley of East Tennessee, where it will always come in competition with coal, both north and south, along the east side of the coal field, more advantageously placed. From the lower part of Cumberland county up through the county in a north-westerly direction, and through Putnam and Jackson or Smith counties to Cumberland river is about seventy-five miles, and at this point on the river there are two mouths more navigable water down the Cumberland to the Ohio river than there is in the Ohio river at Pittsburgh. Further than this, the difference in distance from about Carthage, on the Cumberland river, to Smithland, Ky., at the confluence of the Cumberland and Ohio, is about *six hundred miles* less than from Pittsburgh to Smithland down the Ohio.

Aside from these two great and permanent disadvantages to Pittsburgh, is another of very considerable importance, viz : The obstruction of the falls of the Ohio at Louisville, Ky. For these reasons, there can be no doubt that, in a short time, the natural advantages of Cumberland county, as the real coal field of the Ohio valley, below Louisville, and of the Mississippi valley, will enable it to successfully compete with Pittsburgh for the coal trade of the South. Nor can the Alabama coal fields successfully compete, via Tennessee river, with the Cumberland county field, via Cumberland river. Their outlet is to the Gulf. There are coal fields along the Ohio in Indiana and Kentucky, below Louisville, but no coal there that will make coke, or that can be used in iron making, and none that compares with either the Pittsburgh or Cumberland county coal for grate, steam, or gas purposes. They are used only locally, Pittsburgh, many hundred miles above them, having the entire control, at present, of the coal trade of the lower Ohio and Mississippi, although these coals are mined at Cannelton, and other points on the Ohio, below Louisville. The needs of the Cumberland valley alone will justify and compel the building of a railroad from Cumberland river to the coal field of Cumberland county. The Nashville & Knoxville Railroad Company is about to build a road across the tableland to connect Nashville and Knoxville, and this road, which will be completed within two years, will run through Cumberland county. Another railroad company has been formed by some wealthy gentlemen at Nashville—the Cumberland Railroad Company—to build a road from the southern part of Cumberland county north-west to the nearest point on Cumberland river, expressly to get out this coal. Aside from the needs of Nashville and other cities in the Cumberland valley for this coal—and their growth is checked to-day for the want of it—there is below Nashville the

most remarkable body of iron ore, both for quality and extent, known anywhere in the United States, and known as the Western iron belt of Tennessee, extending across the whole State from Kentucky to the Alabama line. This is a brown hematite, or limonite, and has only been worked heretofore by charcoal. It has had a reputation for sixty years as the finest iron for boiler plate and all the higher uses of iron unequaled by any other iron in the world, and the little of it that is made sells to-day at six and one-half cents a pound, a cent a pound higher than Norway iron. To build up this iron region alone, which is cut by Cumberland river, would justify building a railroad from the river to Cumberland county. But even this is not so important, in this immediate connection, as another matter. First, it should be remembered that, in Cumberland county, and right above the coal, and within a few hundred yards of it, is, in many places, good red hematite iron. But, beyond this, and just off the tableland, and in a level to correspond with that of the Western iron belt, is found the same quality of brown hematite that has long been so famous as "Tennessee iron." This deposit is right on the line of the proposed railroad from the coal field to the river.

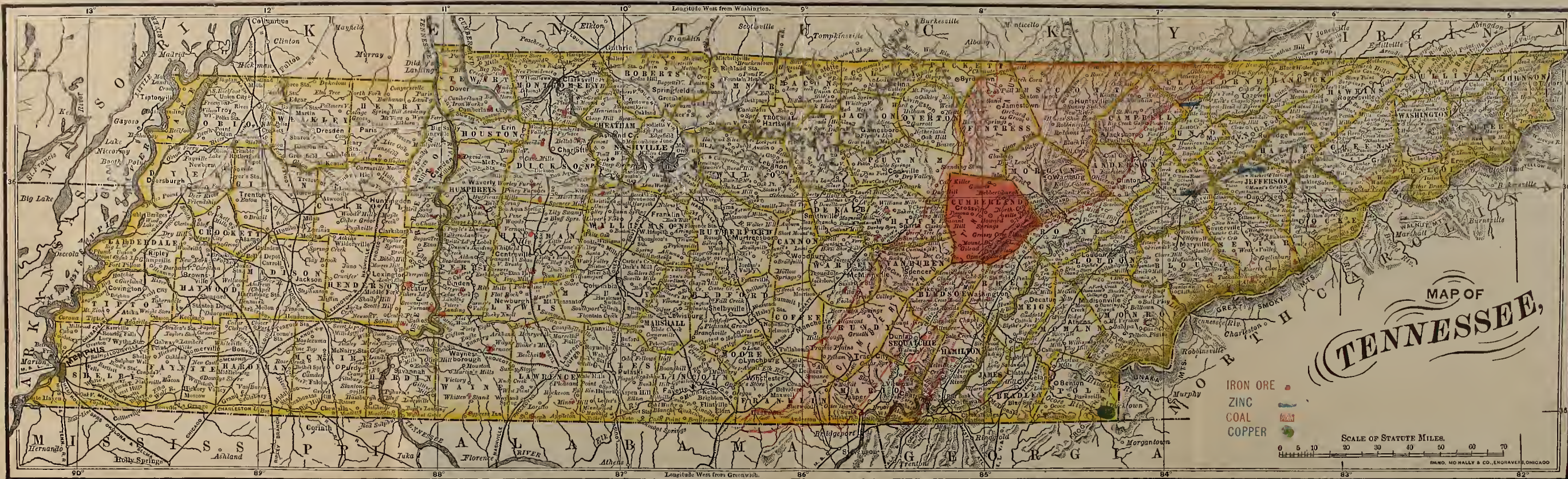
Here, then, are conditions for iron making at least fully equal to those of the famous Birmingham district of Alabama, and certainly superior in quality of iron. There is a very important advantage in another respect. Birmingham has a hot and enervating climate, is malarious, and has not very good water.

THE CLIMATE

Of Cumberland county, on the other hand, is not excelled by any locality. In summer, from the elevation and position of the county, the temperature is about like that of Western New York, with a dry, pure air, with every night cool enough for a blanket, free from mosquitoes; and even in the hottest day the air, while it may burn, is never sultry or oppressive. The temperature of the hot months is ten or fifteen degrees below that of Birmingham, and the dryness of the air increases this advantage. In winter there is very rarely a foggy day, and never a damp one, as compared with the dampness of the valleys. The cold waves resulting from Northern storms are sometimes severe and sharp, but are never long continued, and a large part of the winter is just such weather as is called "Indian Summer" in the Northern States—bright, warm, hazy, dry, with clear, frosty nights.

AS TO HEALTH,

That can be truthfully said of Cumberland county which can be said for very few places in the world. It is a region free from both malarial and pulmonary troubles, and where persons suffering from diseases of either of these great classes receive immediate and remarkable relief and benefit.





THE WATER

Is of the purest freestone, with many iron springs, and is abundant. A twenty-foot well, anywhere, on hill or in hollow, cut into the soft sandstone, brings fine water. The entire sandstone cap seems to be completely saturated from the springs heading in the mountain, and always ready to yield water to a well, while springs are very numerous. The streams are numerous and beautiful. On the southern or eastern side of Crab Orchard, and between there and the eastern brink of the tableland, are half a dozen creeks, Crab Orchard, Piney, Mammy, Whites, Fall, and their little tributaries, beautiful clear mountain streams, affording fine water power, while west of Crab Orchard mountain, and between it and the Pomona ridge, are three large streams, Daddy's creek, flowing north-east along the western base of the mountains, Obed's river and Clear creek beyond, to the west and north, all flowing to the north and east and joining, in the edge of Morgan county, into Obed's river, which empties into Emery, and thence to the Clinch and Tennessee; while west of the Pomona ridge, Caney Fork, the principal tributary to the Cumberland river, takes its rise, flowing south-west off the tableland, and then turning north to join the Cumberland opposite Carthage. Caney Fork has several tributaries on the plateau.

STONE.

The stone of Cumberland county, except about Crab Orchard mountain, is sandstone, and in many places are found stratified quarries, that would furnish the finest of stone for building purposes, or flag stones for cities. About the foot of Crab Orchard mountain the limestone crops out, and on the wall of the tableland, below the coal measures, limestone is found again.

TIMBER.

Only about five per cent. of the county has been cleared. There are a few thousand acres of "natural meadow"—prairie spots of black soil where fine wild hay grows—and the remainder of the county is covered with forest. On the ridges and uplands the timber is small and open. In the hollows and along the creeks it is large and thickly set, and there is also a heavy growth of large trees on the mountain. The trees consist of white and chestnut oak, all the varieties of oak, chestnut, hickory, "basswood" (linn), white and yellow pine, white and yellow poplar, some black walnut, etc., in general terms, all the woods, both hard and soft, found from New York to Georgia. A great deal of it is very valuable, and, on the other hand, much of it is small and of little value except for fuel.

GRASSES.

Throughout the whole county, everywhere under the timber, on the uplands, in the hollows, and on the mountain springs up, during the spring and summer, a very luxuriant growth of wild grasses of half a dozen varieties,

affording the finest grazing for cattle or sheep, and good for eight or nine months in the year. These grasses are blue joint, knot grass, sedge grass, nimblewill, wild peas, and beggar lice, the last two coming on in the autumn, and preferred by the cattle then to any other. They are considered equal to any grain for fattening cattle. Among the tame grasses clover, red top, and timothy do well. The soil lacks lime for bluegrass. One of the most valuable forage crops that could be grown here would be cow peas, both the vine and peas making a food much relished by cattle, and very nutritious and fattening. This crop grows finely here.

STOCK RAISING ADVANTAGES.

Practically, to-day ninety-five per cent. of Cumberland county—and of other tableland counties joining it—is free range. Brands will protect stock, and all that is needed during the eight or nine months' grazing season is occasional salting and a boy on horseback to keep the run of the feeding grounds of a herd. With provision of shelter from winter storms, and forage for three or four months' winter feeding, there is no place in America where the finest of fat cattle can be more profitably raised than in Cumberland county. This applies equally to raising mules. There are several thousand acres of natural meadows. Timothy or red top seed sown on these would soon take possession, to the exclusion of wild hay and without the loss of a single crop, while land cleared by girdling could be rapidly put into tame grasses, clover, red top, timothy, peas, etc. In no country can beets and like vegetables be grown in greater abundance and finer quality than here, and they would greatly add to the value of the long feed for fattening cattle and producing tender and juicy beef. Sheep will do equally well with cattle and either can readily be driven to railroad, at present twenty-four miles east of Crossville (Cincinnati Southern) or twenty-eight miles west (Nashville & Chattanooga).

There are two special and great advantages for hog raising. The mast from the forests is of immense value as food for hogs and useless for any other purpose. The stock and hog interests of the county are insignificant simply because of the great advantages. Stock and hogs run wild on the range the year around. From the time the calf is dropped until the steer is sold he runs the range. Dropped in spring, in the autumn he is a good-sized steer for his age. Then starved through until spring again, he is but a collection of skin and bones, and half the summer is consumed in recovering from the effects of the winter. Still, by fall he is fat and sleek again, but has not grown much and is small. Again starved through the winter, he resembles one of Pharaoh's "lean kine" in his third spring. But by this third fall he is as fat and as sleek as a seal, though hardly larger than a good yearling ought to be, weighing, perhaps, seven hundred pounds or a little more, on an average, and for the very simple reason that in his three years of life he has only been *growing* for about one year. But shelter and feed

him through the winters, and keep him growing, and then give him the benefit of the magnificent range, abundant water, freedom from the annoyance of insects and from extreme heat, all of which the tableland affords, and he will weigh from twelve hundred to fifteen hundred pounds. And graded stock would be as large here as anywhere in the world with the same winter care. Again, take the case of the hog. Nobody pretends to feed hogs. They run the range. The rule that governs them is "Root, hog, or die!" They perish in large numbers, in spring and summer, from starvation. For four months the mast is abundant, the hogs are fat. Then food becomes scarce, and for four months the hog lives principally on the memory of last year's mast; then for four months more he lives almost wholly on the hope of the mast to come, and of course gains little in weight, and his growth is, perhaps, restricted during this eight months. Then comes the new mast. When he is four or five years old—only the hardiest reach this advanced age—if his owner wants a little meat, he takes his rifle and goes for a hog as he would for a deer, hunts until he finds one with his brand, shoots him, and carries him home. This can be done, for at four or five years he is only as large as he would be with proper care in as many months. But in quality he *excels* any corn-fed and carefully-nurtured hog. But with a few stacks of peas for spring feed—and there is no better food for a hog—with a clover field for summer range, and then turned out on the mast from November until March, a three hundred pound hog could be raised, whose pork would be equal to that of the famed Westphalian wild hog. As for mules, there are eight months of fine range, and with winter shelter and feed they could be very profitably and cheaply raised. They generally run the range like cattle and hogs, and fare much better, the year around, than either. The fact is that the stock business will come just near enough to running itself to delude the people into the belief that it will quite do it. They have not yet heard that the Garden of Eden was long since closed and a decree pronounced that man must *earn* his bread; that the decree of the Almighty is still in force, and that since it was pronounced no business has quite run itself. Some work is necessary. As little will do here, in the stock business, as anywhere in the world, in any business, but that little is essential to success. The county is beautifully and abundantly watered in all its parts. No cattle range in the West can compare with this region in any respect—forage, water, freedom from heat or cold, from insects, from cattle diseases, or having so good and near markets. Less than three hundred miles from Cincinnati and two hundred from Atlanta, both good markets, and with very reasonable freights.

AGRICULTURE.

The soil of the tableland in Cumberland county is a sandy loam. In the valleys of the South, where it would be subject to long drouth in summer, it would be considered a poor soil, but its abundant summer moisture

makes it fertile. The tableland and its overlying mountain range is the first barrier to the moisture-laden clouds that throughout the summer blow up from the Gulf of Mexico, and frequent and seasonable summer rains result. The entire sandstone cap, too, is saturated from the springs of Crab Orchard mountain, which is so placed as to be a great natural irrigator.

It is not a soil for wheat, corn, and cereal crops generally speaking; all of these things grow in it, and of very superior quality, but will not equal the quantity of such crops grown on valley and bottom lands. Besides, such crops would be exhaustive to a light soil unless consumed on the place where raised and the manure carefully returned. The soil is very responsive to manure.

FRUITS.

As a fruit country the natural advantages of Cumberland county are not excelled by any region in the Union. The more clearly defined and shorter seasons, resulting from the elevation of two thousand feet above sea level, give to fruits a flavor unknown to the slower growths of the valleys of the South. Apples, pears, plums, quinces, cherries, all the small fruits, grapes, particularly the Concord and White Marthas, grow to perfection and in great abundance. They are never winter-killed. The past winter has been the coldest ever known in Cumberland county, and in the latter part of April, after three weeks of warm weather which had started buds and blossoms, a very severe cold storm covered every twig in forest and orchard with ice, which remained for two or three days, yet every blossom came out in full bloom. Few peaches are grown, but on northern slopes and high points, where the blossom is kept back until danger from frosts has passed, the peach crop is almost a sure one, year after year. With outlet or a home market this county will, in the near future, be the most noted fruit region in the South, and will become as famous for pears as Florida is for oranges.

VEGETABLES.

Garden products in Cumberland county are of the finest quality. Irish and sweet potatoes, beets, cabbages, onions, turnips, and all root vegetables have, from their quicker growth, a crispness and flavor superior to any that can be grown in the valleys of the South. While sweet corn, beans, peas, salads, greens, and in fact everything commonly denominated as "garden truck" can be grown in great abundance and of the very best quality.

DAIRY FARMING,

From the advantages for both grass and cattle, will one day be an exceedingly profitable branch of farming. In the dense population which the development of coal and iron interests must before long bring together here, the peculiar qualities of soil and advantages of climate for fruit, garden, and dairy farming, will be of the greatest importance to the settler, and remunerate the farmer far better than grain crops. These products, to be at their

best, must be consumed as near as possible to the point where they are raised. Grain can be carried long distances, and makes a profitable exchange for such products as this region will send to countries producing grain.

To-day Cumberland county, in its present shape, is but a stock range, but a magnificent one, unequaled by any in the West. Nor can any man stop and consider the situation without being convinced that the mountain region, from Pennsylvania to Georgia and Alabama, is the natural stock range for the Eastern States and for export. The North-west, where cattle must be fed seven months out of twelve, can not compete with a region where nature will feed cattle seven to nine months out of twelve, and once the tide sets in, the cattle interests will be rapidly transferred to this region. Stock-raising is a business that can not be overdone. In 1860, there were in the United States about 820 cattle for each 1,000 of population. In 1880, the proportion was about 710 cattle for each 1,000 of population. This holds good the world over.

The future wealth of Cumberland county is principally in the development of its coal and iron interests, and of its fruit interests. In this connection the relation of a couple of facts is suggestive:

A few years ago a bill came up in the Alabama Legislature in regard to the distribution of a certain surplus fund among the counties. Of course the representatives of the rich counties were in favor of distributing it on the basis of taxation, and one of these gentlemen sneeringly referred to Jefferson county—the Birmingham region of to-day—as the worthless and “pauper” county of the State. A few years ago some gentlemen bought up these iron and coal lands, and began the making of iron. They have from the start set the pace and fixed the price of iron in Pennsylvania—and fixed it very uncomfortably low for the Pennsylvania producer. That they have not suffered in pocket is evinced by the fact that they have just closed a contract for a railroad to Memphis, to connect Birmingham and Kansas City, and they do not propose issuing a dollar of bonds. They will build it for hard cash and run it for Birmingham’s benefit, as a necessary distributor of the wealth they are producing.

It must be remembered always that competition in iron has done away for good with high prices. Profits hereafter must alone come from low cost of production. The need of the North-west for an enlarged market is making a rapid change in Western views of tariff questions, and in Eastern views as well, and the tariff agitation is rapidly forcing out the iron districts where cost of production is greatest. As new plants are built they must be located, first of all, with view to low cost of production. Where coal lands are worth four hundred dollars an acre, as in Pennsylvania, and where iron lands are, relatively, high priced, is not such a field. Cumberland county, with a railroad opening to a market, can make iron at a profit, tariff or no tariff. It will not long lack for transportation. So much for the future of its coal and iron.

As to its future as a fruit country it is worth while to recall the fact that a few years ago the barren ridge near Chattanooga, known as Missionary Ridge, could have been bought for fifty cents an acre. To-day it is a great fruit region. It is good for nothing on earth but fruit, but it commands from two hundred to six hundred dollars an acre for that use.

For general information, we herewith publish the statements made by Albert Williams, Jr., "Chief of Division of Mining Statistics and Technology" for the calendar years of 1883 and 1884, under title of "Mineral Resources of the United States" in United States Geological Survey, pages 1 to 10 inclusive:



MINERAL RESOURCES OF THE UNITED STATES.

CALENDAR YEARS 1883 AND 1884.

ALBERT WILLIAMS, JR.,

Chief of Division of Mining Statistics and Technology.

SUMMARY---1884.

Coal.—The only statistics in which the trade is interested are those relating to the amount of coal which is mined for and reaches the market. There is, besides, a local and colliery consumption which is usually disregarded in statistics, and which ranges from 5 to 6½ per cent. of the total shipments. Of what may be called the commercial product the quantities in 1884 were as follows: Pennsylvania anthracite, 30,718,293 long tons; bituminous and brown coal, lignite, and small lots of anthracite mined elsewhere than in Pennsylvania, 66,809,356 long tons; total, 97,527,649 long tons. The spot value of the commercial product was: Pennsylvania anthracite, \$61,436,586; bituminous and all other coals, \$70,149,824; total, \$131,586,410. Including the local consumption, etc., the total product in 1884 may be stated at 106,906,295 long tons; namely, 33,175,756 long tons of Pennsylvania anthracite and 73,730,539 long tons of bituminous and all other coals; and the value at the mines was: Pennsylvania anthracite, \$66,351,512; bituminous and all other coals, \$77,417,066; total, \$143,768,578. The total production (that is, including colliery and local consumption) of anthracite was 1,160,713 long tons less than in 1883, while its value was \$10,905,543 less, the disproportionate decline in value being due to a fall of 25 cents per ton in spot price (\$2.25 to \$2). The total bituminous coal production increased 5,199,039 long tons over that of 1883; but its value was \$4,820,734 less, the average valuation at the collieries having fallen from \$1.20 to \$1.05. The total output of all coals showed a net gain in tonnage of 4,038,326 long tons and a decline in value of \$15,726,277.

Coke.—There were 4,873,805 short tons of coke made in 1884, worth \$7,242,878 at the ovens. This production consumed 7,951,974 short tons of coal. The amount of coke made was 590,916 tons less than in 1883, and the value was \$878,729 less.

Petroleum.—The production of crude petroleum in 1884 was 24,089,758 barrels of 42 gallons each, of which the Pennsylvania and New York oil fields produced 23,622,758 barrels. The total value, at an average spot

price of 85 cents, was \$20,476,294. As compared with 1883 the production was 689,529 barrels greater; but the total value was \$5,263,958 less, the average spot price having fallen from \$1.10, or 25 cents per barrel.

Natural Gas.—The estimated value of the natural gas used in the United States in 1884 was \$1,460,000, as against \$475,000 in 1883. The value is computed from that of the coal superseded by natural gas.

Iron.—The principal statistics for 1884 are as follows: Iron ore mined, 8,200,000 long tons; value at mine, \$22,550,000. Domestic iron ore consumed, 7,718,129 long tons; value at mine, \$21,224,854. Imported iron ore consumed, 487,820 long tons; total iron ore consumed, 8,205,949 long tons. Pig iron made, 4,097,868 long tons, a decrease of 497,642 tons as compared with 1883; value at furnace, \$73,761,624, or \$18,148,576 less than in 1883. Total spot value of all iron and steel in the first stage of manufacture, excluding all duplications, \$107,000,000, a decline of \$35,000,000 from 1883. Fuel consumed in all iron and steel works, including blast furnaces, 1,973,305 long tons of anthracite, 1,226,986 long tons of bituminous coal, 3,833,170 long tons of coke, and 62,110,660 bushels of charcoal, besides a notable quantity of natural gas. Limestone used as flux, 3,401,930 long tons; value at quarry, \$1,700,965.

Gold and Silver.—The mint authorities estimate the production in 1884 at \$30,800,000 gold and \$48,800,000 silver (coining rate); total, \$79,600,000. This was an increase of \$800,000 gold and \$2,600,000 silver, as compared with 1883. The gold production was equivalent to 1,489,949 troy ounces; and the silver to 37,744,605 troy ounces.

Copper.—The production in 1884, including 2,858,754 pounds made from imported pyrites, was 145,221,934 pounds, worth \$17,789,687, at an average price of $12\frac{1}{4}$ cents per pound in New York City. The amount was 28,070,139 pounds greater than the production of 1883; but the value was \$275,120 less than that for 1883, owing to the decline in price. In 1884, 4,224,000 pounds of bluestone (sulphate of copper, "blue vitriol") were made; worth, at 4.3 cents per pound, \$181,632.

Lead.—Production, 139,897 short tons. Total value, at an average price of \$75.32 per ton on the Atlantic seaboard, \$10,537,042. The production was 4,060 tons less than that of 1883, while the decrease in value was \$1,785,677. The production of white lead (carbonate) is estimated at about 65,000 short tons, worth, at $4\frac{7}{8}$ cents per pound, \$6,337,500, almost all of which was made from pig lead. The production of litharge and red lead has not been ascertained.

Zinc.—Production of metallic zinc, 38,544 short tons; worth, at an average price of 4.44 cents per pound in New York City, \$3,422,707. The output was 1,672 tons greater than in 1883, and the value increased \$111,601. Besides the spelter and sheet zinc, about 13,000 short tons of zinc white (oxide) were made directly from the ore, the total value of which, at $3\frac{1}{2}$ cents per pound, was \$910,000.

Quicksilver.—Production, 31,913 flasks (of 76½ pounds net=2,441,344 pounds), or 14,812 flasks less than in 1883. Total value, at an average price of \$29.34 per flask at San Francisco, \$936,327, a decline of \$317,305 as compared with the total value of the product of the previous year. During the year 600,000 pounds of quicksilver vermilion were made, worth \$288,000.

Nickel.—Production of nickel contained in copper-nickel alloy, 64,550 pounds, worth, at 75 cents per pound, \$48,412; an increase of 5,750 pounds, but a decline of \$4,508 in total value, owing to the falling off in price.

Cobalt.—The amount of cobalt oxide made in 1884 was about 2,000 pounds, as against 1,096 pounds made in 1883. Its value, at \$2.55 per pound, was \$5,100. The value of cobalt ore and matte can not be ascertained, as it is chiefly dependent on the nickel contents.

Manganese.—The output of manganese ore in 1884 was about 10,000 long tons, or 2,000 tons more than in 1883. The total value, at \$12 per ton at the mines, was \$120,000, or about the same as in 1883, the average price having declined \$3 per ton.

Chromium.—The production of chrome iron ore, all from California, was about 2,000 long tons, or about two-thirds as much as in 1883. At an average value of \$17.50 per ton at San Francisco, the total value was \$35,000.

Tin.—A little tin ore was taken out in the course of development work in Dakota, Wyoming, Virginia, and Alabama, but the only metallic tin made was a few hundred pounds from ore of the Black Hills (Dakota) mines made in sample tests at New York City pending the building of reduction works at the mines.

Platinum.—The amount mined in 1884 was about 150 troy ounces, worth, crude, \$3 per ounce.

Aluminum.—The amount made in the United States in 1884 was 1,800 troy ounces, an increase of 800 ounces over the production in 1883. At 75 cents per ounce the total value was \$1,350.

Building Stone.—It is estimated that the value of the building stone quarried in 1884 was \$19,000,000, as against \$20,000,000 in 1883; the decline being due partly to dullness of trade and partly to the increased use of other structural materials.

Brick and Tile.—The output was about the same as in 1883, but as manufacturers cut down expenses still further, meeting a lower market, the total value is estimated at \$30,000,000 as against \$34,000,000 in 1883.

Lime.—There were 37,000,000 barrels (of 200 pounds) made in 1884, the average value per barrel at the kilns being not over 50 cents, or \$18,500,000. The production was about 5,000,000 barrels greater than in 1883, but owing to the fall in price the total value was about \$700,000 less.

Cement.—About 100,000 barrels of (400 pounds) of artificial Portland cement were made, or 10,000 barrels more than in 1883; the total value, at \$2.10 per barrel, being \$210,000. The production of cement from natural cement rock was 3,900,000 barrels (of 300 pounds), or 200,000 barrels less than in 1883; worth, at 90 cents per barrel, \$3,510,000. The total production of all kinds of cement was about 4,000,000 barrels, valued at \$3,720,000.

Precious Stones.—The estimated value of American precious stones sold as specimens and souvenirs in 1884 was \$54,325, and the value of the stones sold to be cut into gems was \$28,650; total, \$82,975. About \$140,000 worth of gold quartz was saved as specimens or made into jewelry and ornaments.

Buhrstones.—The value of buhrstones yearly made in the United States is about \$300,000.

Grindstones.—Dealers estimate the value of grindstones made in 1884 at \$570,000.

Phosphates.—The production of washed phosphate rock in South Carolina during the year ending May 31, 1884, was 431,779 long tons, worth \$2,374,784, or 53,399 tons more than in the previous year, with an increase of \$104,504 in value. The average spot price, \$5.50 per ton, was 50 cents less than in the preceding year. The recent discoveries of phosphate rock in the neighboring States of North Carolina, Alabama, and Florida will probably lead to a still further increase in production. Of manufactured fertilizers, 967,000 short tons, worth \$26,110,000, were made in the year ending April 30, 1884, and 1,023,500 short tons, worth \$27,640,000, were made in the year ending April 30, 1885.

Marls.—In New Jersey about 875,000 tons, worth \$437,500 at the pits, were dug in 1884. In addition, small quantities were produced for local use in some of the Southern States. The production is declining, owing to competition with fertilizers made from phosphate rock, etc.

Gypsum.—In the Atlantic States, from Maine to Virginia, 65,000 long tons of land plaster and 60,000 tons of stucco, total 125,000 tons, were made in 1884, of which nearly all was from Nova Scotia gypsum. The statistics from Michigan have not been reported, but the production did not vary greatly from that of 1883, in which year it was 60,082 short tons of land plaster and 159,100 barrels (of 300 pounds) of stucco. In Ohio 4,217 short tons of land plaster and 20,307 barrels of stucco were produced. There was also a small production in other parts of the country; but the total amount of domestic gypsum used is not known.

Salt.—The production in 1884 was 6,514,937 barrels of 280 pounds (equivalent to 1,824,182,360 pounds, or 32,574,685 bushels, or 912,091 short tons, according to the unit used). The total value, computed on average wholesale prices at the point of production, was \$4,197,734. The apparent output was 322,706 barrels greater than in 1883, while the value

was \$13,308 less; but the production figures do not include a considerable stock on hand in the Onondaga district, not officially reported because not inspected.

Bromine.—The production is estimated at 281,100 pounds, all from the Ohio and West Virginia Salt District; worth, at 24 cents per pound, \$67,464.

Borax.—Production about 7,000,000 pounds, or 500,000 pounds more than in 1883. The total value, however, was less than that of the product of 1883, being about \$490,000 at San Francisco rates, as against \$585,000 in 1883.

Sulphur.—No exact statistics. The production was only about 500 tons, worth about \$12,000.

Pyrites.—About 35,000 long tons were mined in the United States, worth about \$175,000 at the mines. Some 33,500 tons of imported pyrites were also burned, making a total consumption of 68,500 tons.

Barytes.—Full statistics not received. The production is estimated to have been about 25,000 tons; worth, at \$4 per ton, unground, at the point of production, \$100,000.

Mica.—The production of merchantable sheet mica, not including mica waste, was 147,410 pounds, valued at \$368,525.

Feldspar.—The production was 10,900 long tons, or 3,200 tons less than in 1883. Its value at the quarries was \$55,112.

Asbestos.—The amount mined was about 1,000 short tons, worth about \$30,000.

Graphite.—Production nominal, the supply being drawn from the stock accumulated in 1883.

Asphaltum.—The annual production is about 3,000 tons, having a spot value of \$10,500.

Alum.—About 38,000,000 pounds were made in the United States in 1884, or 3,000,000 pounds more than in 1883. At an average spot value of $1\frac{7}{8}$ cents per pound, the product was worth \$712,500.

Copperas.—The amount made in 1884 was 15,500,000 pounds, worth, at 60 cents per hundred weight, \$93,000.

Mineral waters.—The sales of natural mineral waters in 1884 amounted to 68,720,936 gallons, valued at \$1,665,490, an apparent increase of 21,431,193 gallons and \$526,007 upon the figures for 1883. While the sales are undoubtedly increasing, it is possible that the excess in the reported quantity and value of the waters sold in 1884 as compared with 1883 may be partly due to the greater fullness of the returns for 1884. Besides the waters bottled and placed on the market there is a large local consumption, not included in the foregoing figures.

Totals.—As was remarked in the former report, it is impossible to state the total mineral product in any form which shall not be open to just criticism. It is evident that the production statistics of such incongruous substances as iron ore, metallic gold and silver, the spot value of coal mined

and the market value of metallic copper after having been transported hundreds of miles, the spot value of a crude substance like unground, unrefined barytes, and the value of a finished product like brick (in which the cost of manufacture is the leading item) can not well be taken as items in a general summary. The statistics have been compiled with a view to giving information on those points which are of most interest and utility, and are presented in the form usual in the several branches of trade statistics. The result is that the values stated for the different products are necessarily taken at different stages of production or transportation, etc. Theoretically perfect statistics of mineral products would include first of all the actual net spot value of each substance in its crudest form, as taken from the earth; and yet for practical purposes such statistics would have little interest other than the fact that the items could be combined in a grand total in which each substance should be rated on a fairly even basis. The following groupings, therefore, are presented with a full realization of the incongruity of many of the items. The grand total might be considerably reduced by substituting the value of the iron ore mined for that of the pig iron made, by deducting the discount on silver, and by considering lime, salt, cement, borax, etc., as manufactures. It will also be remarked that the spot values of copper, lead, zinc, and chrome iron ore are much less than their respective values after transportation to market. Still, the form adopted seems to be the only one which admits of a comparison of the total values of the mineral products from year to year:

METALLIC PRODUCTS OF THE UNITED STATES IN 1884.

	QUANTITY.	VALUE.
Pig iron, long tons, spot value	4,097,868	\$73,761,624
Silver, troy ounces, coining value	37,744,605	48,800,000
Gold, troy ounces, coining value	1 489,949	30,800,000
Copper, pounds, value at New York City (a)	145,221,934	17,789,687
Lead, short tons, value at New York City	139,897	10,537,042
Zinc, short tons, value at New York City	38,544	3,422,707
Quicksilver, flasks, value at San Francisco	31,913	936,327
Nickel, pounds, value at Philadelphia (b)	64,550	48,412
Aluminum, troy ounces, value at Philadelphia	1,800	1,350
Platinum, troy ounces, value crude at New York City	150	450
Total		\$186,097,599

(a) Including copper made from imported pyrites.

(b) Including nickel in copper-nickel alloy.

NON-METALLIC MINERAL PRODUCTS OF THE UNITED STATES IN 1884 (spot values).

	QUANTITY.	VALUE.
Bituminous coal, brown coal, lignite, and anthracite mined elsewhere than in Pennsylvania long tons (a)	73,730,539	\$77,417,066
Pennsylvania anthracite long tons (b)	33,175,756	66,351,512
Petroleum barrels	24,089,758	20,476,294
Building stone		19,000,000
Lime barrels	37,000,000	18,500,000
Salt barrels	6,514,937	4,197,734
Cement barrels	4,000,000	3,720,000
South Carolina phosphate rock long tons (c)	431,779	2,374,784
Limestone for iron flux long tons	3,401,930	1,700,965
Mineral waters gallons sold	68,720,936	1,665,490
Natural gas		1,460,000
Zinc white short tons	13,000	910,000
Concentrated borax pounds	7,000,000	490,000
New Jersey marls short tons	875,000	437,500
Mica pounds	147,410	368,525
Pyrites long tons	35,000	175,000
Gold quartz souvenirs, jewelry, etc.		140,000
Manganese ore long tons	10,000	120,000
Crude barytes long tons	25,000	100,000
Ocher long tons	7,000	84,000
Precious stones		82,975
Bromine pounds	281,100	67,464
Feldspar long tons	10,900	55,112
Chrome iron ore long tons	2,000	35,000
Asbestos short tons	1,000	30,000
Slate ground as a pigment long tons	2,000	20,000
Sulphur short tons	500	12,000
Asphaltum short tons	3,000	10,500
Cobalt oxide pounds	2,000	5,100
Total		\$220,007,021

(a) The commercial product, that is, the amount marketed, was only 66,809,356 tons, worth \$70,149,824.

(b) The commercial product, that is, the amount marketed, was only 30,718,293 tons, worth \$61,436,586.

(c) Year ending May 31st.

RÉSUMÉ OF THE VALUES OF THE METALLIC AND NON-METALLIC MINERAL SUBSTANCES PRODUCED IN THE UNITED STATES IN 1884.

Metals	\$186,097,599
Mineral substances named in the foregoing table	220,007,021

\$406,104,620

Fire-clay, kaolin, potter's clay, common brick clay, terra cotta, building sand, glass sand, limestone used as flux in lead smelting, limestone in glass making, iron ore used as flux in lead smelting, marls (other than New Jersey), gypsum, tin ore, antimony, iridosmine, mill-bulrstone and stone for making grindstones, novaculite, corundum, lithographic stone, talc and soapstone, quartz, fluorspar, nitrate of soda, carbonate of soda, sulphate of soda, native alum, ozocerite, mineral soap, strontia, infusorial earth and tripoli, pumice-stone, sienna, umber, etc., certainly not less than

7,000,000

Grand total 413,104,620

METALLIC PRODUCTS OF THE UNITED STATES IN 1883.

The production in 1884, 1883, and 1882 compared.—Tables showing the quantities and values of the mineral products of the United States in 1883 and 1882 are appended for the sake of comparison. From these it appears that the total value of the metals and minerals produced in 1884 was \$39,-100,008 less than in 1883, and that the decline in 1883 from 1882 was \$3,012,061; that is, the falling off in value began on a small scale in 1883, but was accented in 1884. The net decline, as will be seen by reference to the tables, has been due rather to a depression in price than a decrease in quantity; indeed, several important substances show a decided increase in production notwithstanding the general dullness of trade. The over-production, taking the whole field into consideration, has been less than was generally feared.

	QUANTITY.	VALUE.
Pig iron, long tons, spot value	4,595,510	\$91,910,200
Silver; troy ounces, coining value	35,733,622	46,200,000
Gold, troy ounces, coining value	1,451,249	30,000,000
Copper, pounds, value at New York City (a)	117,151,795	18,064,807
Lead, short tons, value at New York City	143,957	12,322,719
Zinc, short tons, value at New York City	36,872	3,311,106
Quicksilver, flasks, value at San Francisco	46,725	1,253,632
Nickel, pounds, value at Philadelphia (b)	58,800	52,920
Aluminum, troy ounces, value at Philadelphia	1,000	875
Platinum, troy ounces, value crude at New York City	200	600
Total		\$203,116,859

(a) Including copper made from imported pyrites.

(b) Including nickel in copper-nickel alloy.

NON-METALLIC MINERAL PRODUCTS OF THE UNITED STATES IN 1883 (spot values).

	QUANTITY.	VALUE.
Bituminous coal, brown coal, lignite, and anthracite mined elsewhere than in Pennsylvania long tons (a)	68,531,500	\$82,237,800
Pennsylvania anthracite long tons (b)	34,336,469	77,257,055
Petroleum barrels	23,400,229	25,740,252
Building stone		20,000,000
Lime barrels	32,000,000	19,200,000
Cement barrels	4,190,000	4,293,500
Salt barrels	6,192,231	4,211,042
South Carolina phosphate rock long tons (c)	378,380	2,270,280
Limestone for iron flux long tons	3,814,273	1,907,136
Mineral waters gallons sold	47,289,743	1,139,483
Concentrated borax pounds	6,500,000	585,000
New Jersey marls short tons	972,000	486,000
Natural gas		475,000
Mica pounds	114,000	285,000

(a) The commercial product, that is, the amount marketed, was only 65,030,171 tons, worth \$78,036,205.

(b) The commercial product, that is, the amount marketed, was only 31,793,027 tons, worth \$71,534,311.

(c) Year ending May 31st.

NON-METALLIC MINERAL PRODUCTS OF THE UNITED STATES IN 1883, ETC. (Continued).

	QUANTITY.	VALUE.
Pyrites long tons	25,000	\$137,500
Manganese ore long tons	8,000	120,000
Gold quartz souvenirs, jewelry, etc.		115,000
Crude barytes long tons	27,000	108,000
Precious stones		92,050
Ocher long tons	7,000	84,000
Bromine pounds	301,100	72,264
Feldspar long tons	14,100	71,112
Chrome iron ore long tons	3,000	60,000
Graphite pounds	575,000	46,000
Asbestos short tons	1,000	30,000
Sulphur short tons	1,000	27,000
Slate ground as a pigment long tons	2,000	24,000
Asphaltum short tons	3,000	10,500
Cobalt oxide pounds	1,096	2,795
Total		241,087,769

RÉSUMÉ OF THE VALUES OF THE METALLIC AND NON-METALLIC MINERAL SUBSTANCES
PRODUCED IN THE UNITED STATES IN 1883.

Metals	\$203,116,859
Mineral substances named in the foregoing table	241,087,769
	444,204,628
Estimated value of mineral products unspecified	8,000,000
Grand total	452,204,628

METALLIC PRODUCTS OF THE UNITED STATES IN 1882.

	QUANTITY.	VALUE.
Pig iron, long tons, spot value	4,623,323	\$106,336,429
Silver, troy ounces, coining value	36,197,695	46,800,000
Gold, troy ounces, coining value	1,572,186	32,500,000
Copper, pounds, value at New York City (a)	91,646,232	16,038,091
Lead, short tons, value at New York City	132,890	12,624,550
Zinc, short tons, value at New York City	33,765	3,646,620
Quicksilver, flasks, value at San Francisco	52,732	1,487,042
Nickel, pounds, value at Philadelphia (b)	281,616	309,777
Antimony, short tons, value at San Francisco	60	12,000
Platinum, troy ounces, value crude at New York City	200	600
Total		219,755,109

(a) Including copper made from imported pyrites.

(b) Including nickel in copper-nickel alloy.

NON-METALLIC MINERAL PRODUCTS OF THE UNITED STATES IN 1882 (Spot values).

	QUANTITY.	VALUE.
Bituminous coal, brown coal, lignite, and anthracite mined elsewhere than in Pennsylvania long tons (a)	60,861,190	\$76,076,487
Pennsylvania anthracite long tons (b)	31,358,264	70,556,094
Petroleum barrels (c)	30,053,500	23,704,698
Lime barrels (c)	31,000,000	21,700,000
Building stone		21,000,000
Salt barrels	6,412,373	4,340,140
Cement barrels	3,250,000	3,672,750
Limestone for iron flux long tons	3,850,000	2,310,000
South Carolina phosphate rock long tons (d)	332,077	1,992,462
New Jersey marls short tons	1,080,000	540,000
Concentrated borax pounds	4,236,291	338,903
Mica pounds	100,000	250,000
Natural gas		215,000
Ocher long tons	7,000	105,000
Soapstone short tons	6,000	90,000
Crude barytes long tons	20,000	80,000
Precious stones		75,000
Gold quartz souvenirs, jewelry, etc.		75,000
Pyrates long tons	12,000	72,000
Manganese ore long tons	3,500	52,500
Chrome iron ore long tons	2,500	50,000
Asbestos short tons	1,200	36,000
Graphite pounds	425,000	34,000
Cobalt oxide pounds	11,653	32,046
Slate ground as pigment long tons	2,000	24,000
Sulphur short tons	600	21,000
Asphaltum short tons	3,000	10,500
Corundum short tons	500	6,250
Pumice stone short tons	70	1,750
Total		227,461,580

(a) The commercial product, that is, the amount marketed, was only 57,963,038 tons, worth \$72,453,797.

(b) The commercial product, that is, the amount marketed, was only 29,120,096 tons, worth \$65,520,216.

(c) Pennsylvania and New York field only; the outside production was very small.

(d) Year ending May 31st.

RÉSUMÉ OF THE VALUES OF THE METALLIC AND NON-METALLIC MINERAL SUBSTANCES PRODUCED IN THE UNITED STATES IN 1882.

Metals	\$219,755,109
Mineral substances named in the foregoing table	227,461,580
	447,216,689
Estimated value of mineral products unspecified	8,000,000
Grand total	455,216,689

This total for 1882 has been increased, by corrections and additions, \$1,304,283 upon the figure given in the first report of this series, which was \$453,912,406.

